

## CLAIMS

1. A method of detecting the presence of or predisposition to or protection from obesity or an associated metabolic disorder in a subject, the method comprising detecting the presence of an alteration in the PPY, PYY and/or GIP gene locus in a sample from the subject, the presence of said alteration being indicative of the presence of or the predisposition to, or the protection from obesity or an associated disorder.
2. A method of assessing the response of a subject to a treatment of obesity or an associated metabolic disorder, the method comprising detecting the presence of an alteration in the PPY, PYY and/or GIP gene locus in a sample from the subject, the presence of said alteration being indicative of a particular response to said treatment.
3. A method for preventing obesity or an associated disorder in a subject, comprising detecting the presence of an alteration in the PPY, PYY and/or GIP gene locus in a sample from the subject, the presence of said alteration being indicative of the predisposition to obesity or an associated disorder; and, administering a prophylactic treatment against obesity or an associated disorder.
4. The method of any one of claims 1 to 3, wherein said alteration in the PPY, PYY and/or GIP gene locus is selected from a mutation, a deletion and an insertion in the PPY, PYY and/or GIP gene locus.
5. The method of any one of claims 1 to 4, wherein the presence of an alteration in the PPY, PYY and/or GIP gene locus is detected by sequencing, selective hybridisation and/or selective amplification.
6. The method of any one of claims 1 to 5, wherein said alteration is one or several SNP(s) or an haplotype of SNPs associated with obesity.

7. The method of claim 6, wherein said haplotype associated with obesity comprises SNPs selected from the group consisting of SNP4, SNP5, SNP6, SNP7, SNP8, SNP9, SNP10 and SNP11.
- 5    8. The method of claim 7, wherein said haplotype associated with obesity comprises SNP4, SNP5 and SNP6.
9. The method of claim 7, wherein said haplotype associated with obesity comprises SNP5, SNP6 and SNP7.
- 10    10. The method of claim 9, wherein said haplotype further comprises SNP4 or SNP8 or both.
11. The method of claim 7, wherein said haplotype associated with obesity comprises
- 15    SNP9 and SNP10.
12. The method of claim 7, wherein said haplotype associated with obesity comprises SNP10 and SNP11.
- 20    13. The method of claim 11 or 12, wherein said haplotype associated with obesity comprises SNP9, SNP10 and SNP11.
14. The method of claim 6, wherein said SNP associated with obesity is selected in the group consisting of SNP7, SNP8, SNP9, SNP10 and SNP11.
- 25    15. The method of claim 14, wherein said SNP associated with obesity is SNP7 or SNP8.
16. The method of claim 14, wherein said SNP associated with obesity is SNP9, SNP10
- 30    or SNP11.

17. The method of any one of claims 1 to 5, wherein said alteration is in the PYY gene locus.

18. The method of any one of claims 1 to 5, wherein said alteration is in the PPY gene  
5 locus.

19. The method of any one of claims 1 to 5, wherein said alteration is in the GIP gene locus.